

STANDARD FORM NO. 64

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Office Memorandum • UNITED STATES GOVERNMENT

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TO : The Files - Contract RD-161, Task Order 1

DATE: 26 August 1959

FROM :

SUBJECT: (Trip Report - CR-17 Collection Receiver,

20 AUG 59, RD-161)

FIG	8	REV DATE	15 APR 1960	BY	064540
ORIG COMP	033	ORI	56	DATE	02
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1. On 20 August 1959 the undersigned visited to monitor progress on the CR-17 Collection Receiver. Participating in the discussions were:

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2. The CR-17 is a four-band transistorized collection receiver

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This band of approximately 20 megacycles is divided into four sub-bands, each 4.5 megacycles wide with high skirt selectivity to avoid interference between adjacent bands. There would appear to be three circuit designs applicable for this receiver: (1) TRF, with tuned passive filters to isolate the bands, (2) superhet, with one local oscillator and four IF frequencies, (3) superhet, with four local oscillators and four IF's, all of the same frequency. Each design has advantages and disadvantages. has elected to construct the CR-17 Receiver using a TRF technique.

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3. A block diagram of the proposed circuit layout is shown in Figure 1 of this report. The TRF technique has a number of significant advantages, in that such receivers can be built with very low noise figures, circuitry is very simple, components are few, and there is no problem with radiation from local oscillators. Several disadvantages also appear with this type configuration. First, there can be considerable difficulty in designing a stable, wide-band, high-gain amplifier operating in this frequency range. This problem is aggravated by the tendency of a greatly amplified RF signal finding its way back to the front end of the receiver as positive feed-back. hopes to minimize this problem by limiting the gain in the RF portion of the receiver to only 50 db. At this point, the signal will be detected, and the remaining 40 db gain will be furnished by video amplifiers. This should decrease the problem of high-gain, wide-band RF amplification, as well as that of avoiding positive feedback from highly amplified RF signals. Another problem

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SUBJECT: Trip Report - CR-17 Collection Receiver

with this design will be that of designing a passive filter which furnishes the specified skirt selectivity. It has been requested that the output signal be 40 db down 1 mc outside of the specified pass bands. This characteristic would be much easier to achieve with an IF frequency of approximately 20 mc. With TRF design, this characteristic must be achieved at the signal frequency [redacted]. The problem is by no means insurmountable, but nevertheless will require considerable design effort. In order to test the correctness of their theories, [redacted] will begin the program by constructing a breadboard engineering model of the CR-17 receiver, which should be completed within the first two months of the contract. If TRF design should prove unfeasible, the alternate superhet design will be used.

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4. The subject of progress reports was also considered during this meeting. Under the contract, [redacted] is obligated to submit to the contracting officer a brief monthly letter report describing all major experiments and test results for that reporting period. It was agreed that the included time of the reporting period would be from the 15th of one month to the 15th of the following month, with the report to be submitted to the contracting officer not later than two weeks after the end of the reporting period.

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SUBJECT: Trip Report - CR-17 Collection Receiver



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Attachment:

Figure 1 - CR-17 Circuit Sketch

cc: R+D Subject File
R+D Lab
SP/EA
Monthly (2)
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- 3 -

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Place Feb.

The Files

12 January 1959

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New Equipment Designation

REF : New Equipment Designation Memo to The Files dated 8 October 1958.

1. The following designation previously assigned on 8 October 1958 is hereby amended to read as follows:

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2. Please insert this corrected description into any files that refer to this device.

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APPROVED:

Chief, Research and Development Branch

OC-E/R+D-EP/RMS:bc (12 January 1959)

cc: Equipment Designation File / Project File

R+D Lab / MEB/MCS / SP/AF / SP/EA

R+D Chrono

EP Chrono

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